FY 2003-2007 Capital Investment Plan
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Federal Aviation Administration Capital Investment
Plan for Fiscal Years 2003-2007

1.0 Overview

This section provides an overview of the Federal Aviation Administration's (FAA) Aviation System Capital Investment Plan (CIP) and the relationship of the CIP to performance-based planning and to other agency plans. This CIP identifies the FAA's Facilities and Equipment (F&E) funding plan and the alignment of the capital planning with the Office of the Secretary of Transportation (OST) and the FAA Goals. The plan discusses investments by goal category in Appendix A. Appendix B contains Fiscal Year (FY) 2002 accomplishments and, in terms of output goals, planned activities for FY 2003 through FY 2007. Appendix C provides the budget profiles for FAA capital investments through FY 2007. Appendix D provides a list of acronyms.

The National Airspace System (NAS) is the most technologically advanced and complex aviation system in the world. Comprised of a system of systems, the NAS links pilots, controllers, and support personnel together to deliver the nation's air transportation system. The FAA and the nation's airports provide the supporting infrastructure upon which the NAS services and capabilities are delivered.

The CIP addresses safety, security, efficiency, air traffic control productivity, facilities and equipment, and increasing the capacity of the air transportation system. The plan creates a foundation for the existing NAS to evolve by expanding services to meet the growing demand. New technologies are introduced and current services are sustained.

The FAA has set the following long-term outcomes for the NAS:

> ***SAFETY****: By 2007, reduce U.S. aviation fatal accident rates by 80 percent from 1996 levels.*
>
> ***SECURITY****: Prevent security incidents in the aviation system.*
>
> ***SYSTEM EFFICIENCY****: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.*

This CIP flows from these outcomes. For example, the FAA Strategic Plan specifies strategies to achieve the safety goal by progressively lowering accident and incident rates. In security, the strategies focus on protecting the traveling public, protecting employees at FAA facilities, and protecting the NAS. For system efficiency, emphasis is placed on NAS modernization, capacity enhancements, free flight, and systems integration. The new Transportation Security Administration (TSA) has assumed responsibility for significant portions of the FAA's security outcomes relating to passenger and cargo security; however, the FAA continues to be responsible for the protection of employees, critical facilities, and NAS information security.

1.1 Purpose of the Capital Investment Plan

The FAA provides air traffic control (ATC), aviation safety, and security services, and establishes the necessary international coordination to provide a seamless global aviation system. In order to achieve this objective, the FAA uses a formal investment planning approach, defined as the Acquisition Management System (AMS.) This system defines how investments are made, provides the analyses to support investment decisions, and establishes the financial and management tracking for FAA acquisitions. The AMS is based on mission analysis and planned capabilities that are further defined in the NAS Architecture. The AMS policies are available at http://fast.faa.gov/.

The CIP's purpose is to provide Congress with a summary of activities for budget planning, both in the year of submittal of the President's budget, and funding projections for four years beyond the current budget year. The plan explains how investments are to be planned and made. It ties projects to goals, and shifts toward an outcome- and output-based budget. This plan represents significant progress towards linking the FAA capital budget to performance outcomes and outputs consistent with the President's management initiative to improve budget linkages to performance.

1.2 Relationship of the Capital Investment Plan to Other Plans

The CIP for FY 2003 through 2007 funds capital assets necessary to implement outcomes in more detailed plans. The role of the CIP is to integrate this funding. Readers will find detailed information online through web sites provided in the CIP that point to other plans.

1.2.1 The Federal Aviation Administration Strategic Plan

The FAA Strategic Plan reflects the planning and policy guidance outlined in the Department of Transportation (DOT) Strategic Plan. It provides strategic direction for the organization, and establishes long-term goals for the nation's transportation infrastructure. The CIP translates these goals into outputs, and provides funding planning to accomplish the capital development portions of the FAA and DOT Strategic Plans. The DOT Strategic Plan is available at http://stratplan.dot.gov/.

The FAA Strategic Plan may be viewed at http://www.apo.data.faa.gov/dirplans/docs/SP2001.html.

1.2.2 The Federal Aviation Administration Annual Performance Plan

The FAA Annual Performance Plan contains annual performance goals that have measurable target levels of performance, in terms of outputs and outcomes, for various programs and projects. The FAA Annual Performance Plan is available at http://www.apo.data.faa.gov/dirplancs/docs.

1.2.3 The Line-of-Business and Regional Performance Plans

The lines-of-business (LOB) and regional performance plans are developed and used to define the steps to achieve stated goals and objectives. Based on the mission goals of the FAA, as established in the FAA Strategic Plan, individual LOBs establish specific goals and identify contributions to the FAA Strategic Goal. Individual FAA organizations have contributory roles, demonstrated by their development of goals for their programs, that support the achievement of the overall FAA goal.

The degree to which the CIP supports the regional performance plans depends on the extent of the capital development work identified in the NAS Architecture, the FAA Strategic Plan, and the FAA Annual Performance Plan. The LOBs and regional plans can be found at http://www.apo.data.faa.gov/dirplancs/docs/.

1.2.4 The National Airspace System Architecture

In January 1999, the FAA Administrator approved the NAS Architecture, which represents the aviation community consensus on modernization. Since 1999, the FAA has made significant progress in implementing the NAS Architecture. The NAS Architecture addresses safety, security, efficiency, capacity, and sustainment of aviation services. Its planning horizon extends through 2015, and it is used as an engineering tool to define NAS modernization implementation steps, interdependencies, and sequences of changes in the NAS. The NAS Architecture may be viewed at http://www.nas-architecture.faa.gov/.

1.2.5 The Operational Evolution Plan

The Operational Evolution Plan (OEP) is a joint FAA/industry plan that focuses on implementing capacity and efficiency improvements in the NAS through 2010. It represents the FAA's commitment to the aviation community and integrates capital investments, procedural and airspace changes, operations, and engineering development. Recent revisions to the OEP reflect priority changes relating to security and the economic downturn of the aviation industry. The OEP can be viewed at http://www.faa.gov/programs/oep.

1.2.6 The Aviation Capacity Enhancement Plan

This plan reports on the progress toward increasing the capacity of the nation's airports. It focuses on changes at the airports that increase arrivals and departures (throughput). The Aviation Capacity Enhancement Plan looks at developing capacity through airport infrastructure changes, airspace and procedural changes, and introduction of new technology. The Aviation Capacity Enhancement Plan can be viewed at http://www.faa.gov/ats/asc/pubs.html.

1.2.7 The Airport Benchmark Report

The Airport Benchmark Report relates to both the Aviation Capacity Enhancement Plan and the OEP. This report defines the current throughput of 31 capacity-constrained airports. Airport improvements in the OEP focus on these 31 airports. The Airport Benchmark Report can be viewed at http://www.faa.gov/events/benchmarks.

1.3 Capital Investment Plan Funding Levels

The CIP aligns the next five years of the NAS Architecture to the Office of Management and Budget's (OMB) five-year budget planning guidance and funding proposed under the Wendell H. Ford Aviation Investment and Reform Act (AIR-21), PL 106-181. Appendix C contains the budget line item (BLI) funding profiles projected through FY 2007.

The CIP balances investments among the aerospace related goals of safety, security, and efficiency. Safety and security will continue to rate as the highest priorities for capital investment spending. Operating improvements will retain their emphasis on sustaining existing core services, which provide traffic separation, navigation, communications, and traffic flow management. Investment in new methods and technologies for managing capacity and demand are included and have evolved from modernization initiatives in partnership with air carriers, general aviation (GA), and the Department of Defense (DoD).

The FAA has identified five goal categories for investments plus the personnel costs to provide capital assets. These investment categories are aligned to the goals and help to group capital investment outputs. These categories define the format of the CIP, and the appendices describe the funding levels expected over the next five years with outputs at the BLI level.

- Category 1: Improve Aviation Safety (Section 2.0)
- Category 2: Improve Efficiency of the Air Traffic Control System (Section 3.0)
- Category 3: Increase Capacity of the National Airspace System (Section 4.0)
- Category 4: Improve Reliability of the National Airspace System (Section 5.0)
- Category 5: Improve Efficiency of Mission Support (Section 6.0)

The distribution of funding for FY 2003 shows continuing emphasis on NAS modernization.

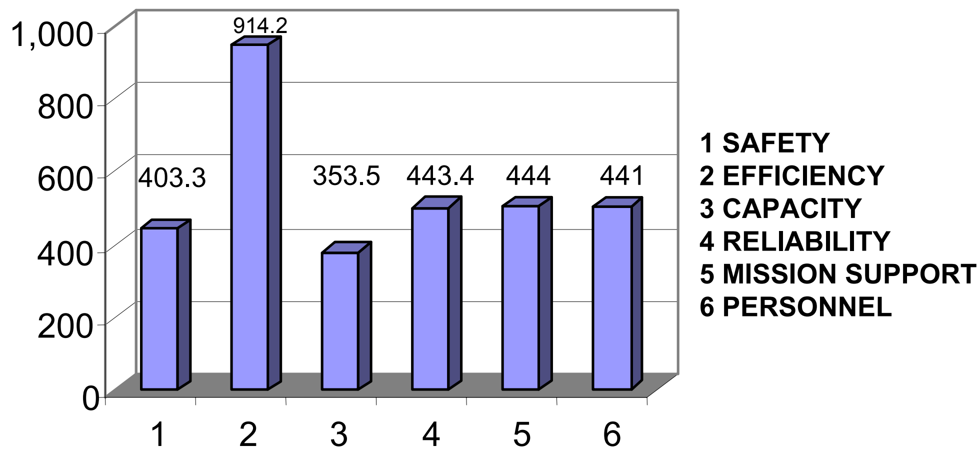


Figure 1 FY 2003 Distribution Among Goal Categories (in $ millions)

1.4 Changes in Priorities as a Result of the Attacks of September 11, 2001

The use of the NAS and civilian air carriers as weapons of mass destruction has resulted in changes in capital investments. Immediately following the second attack on the World Trade Center, the Secretary of Transportation directed the diversion of all air carrier aircraft and the grounding of all civil aviation. The immediate response required unprecedented communications between the FAA's command elements, air traffic controllers, and the users. Since September 11, 2001, the FAA has been supporting North American Air Defense Command (NORAD) activities for homeland defense, and has been improving the communications infrastructure. Priorities were changed to fund immediate needs and funding in FY 2003 continues security programs accelerated in FY 2002.

1.4.1 Homeland Security Needs for Communications, Navigation, and Surveillance

The TSA, in partnership with DoD and the Office of Homeland Security, are initiating a review of all communications, navigation and surveillance requirements of the NAS. For example, the FAA had planned to decommission obsolete inland long-range primary radar. The DoD has now requested sustained operation of all primary radar for the present time. The Joint DoD/FAA Radar Planning Group has initiated a review of the conversion of radar sites to provide a three-dimensional primary radar capability (adding elevation). This conversion would require a replacement for older radar. The FAA will continue to maintain the existing radar until the DoD determines the replacement. Revisions to strategies for communications, navigation, and surveillance, and therefore current FAA plans, may be required as security needs are assessed and homeland defense measures defined that require capital investment.

1.4.2 Explosive Detection and Passenger Screening Transferred to the New Transportation Security Administration

The Aviation and Transportation Security Act, PL 107-71, passed by Congress and signed by the President on November 19, 2001, transferred major portions of the responsibility for aviation security to the new Transportation Security Administration. While the FAA retains responsibility for aircraft airworthiness, regulation of airmen, and security of FAA facilities, personnel, and the NAS, the TSA has assumed responsibility for most aspects of aviation security, primarily airport security and passenger and cargo screening. For FY 2003, the budget provides $121.5 million in F&E for security equipment. This funding will be reimbursed to the TSA as it undertakes equipment acquisition activities. The CIP includes out year amounts for display purposes only. The FAA expects this funding to be absorbed into the TSA in the future.

1.4.3 Federal Aviation Administration Facility and Personnel Security

The FAA began improvements to physical security and access control at major FAA facilities in FY 1999 with development of new standards and prioritization facility upgrades. In FY 2000, modifications started at the FAA's largest facilities. As a result of September 11, 2001, revised procedures and the presence of armed guards have increased security at FAA. Capital funding in FY 2003 has increased from an originally planned $22.5 million to $37.3 million. Increases have been made in the out years to complete facility and personnel protection.

1.4.4 Communications Upgrades

The events of September 11, 2001 significantly strained the FAA's ability to communicate between facilities, with aviation users, and with the general public. The redirection and landing of all civil aircraft flying in the NAS and flying toward U.S. destinations had to be accomplished safely and promptly. The FAA successfully performed this mission, but the existing communications capabilities approached or became saturated, especially in command and control functions. Funding for command and control communications (C^3) has been increased from the FY 2002 CIP under the NAS recovery communications budget line.

On September 13, 2001, the NAS reopened with a significant number of flight restrictions. Currently, the FAA must provide civil users with information on temporary flight restrictions and distribute this information to users through Notices to Airmen (NOTAM). NOTAM distribution is a critical part of restricting flight operations on a temporary basis. All FAA employees involved in air traffic control and those aiding pilots in flight planning must have timely access to information about restrictions. Therefore, the FY 2002 funding was increased and planned work for NOTAM distribution was accelerated. Funding for FY 2003 through 2007 has also increased to progressively improve the distribution of information.

1.4.5 Impact of September 11, 2001 on Capacity and Efficiency

As part of developing the OEP, Version 4.0, the FAA and aviation users conducted extensively discussed the current economic impact on air transportation and the recovery of the airlines. The airlines were already experiencing pressure from the economic recession. The subsequent loss of public confidence in air transportation, evidenced by declining travel, has caused the airlines and some airports to shift their strategies. The airlines have reduced or terminated services to less profitable markets, retired older aircraft that cost more to maintain and operate, reduced their service schedules between major city pairs, and reduced personnel. However, traffic delays have not disappeared between major markets. There are still delays associated with operating peaks at some airports and during adverse weather conditions.

There is general agreement that the air transportation recovery will take 12 to 18 months before passenger demand returns to pre-September 11, 2001 levels. Less predictable is when the airlines will return to profitability. This return is important because a significant portion of the NAS Modernization is dependent upon the airlines equipping with new technologies, such as data link, digital communications, and improved navigation and surveillance capabilities. Figure 2 illustrates historical recovery from recessions. Note that revenue passenger miles (RPM) are closely linked to the gross domestic product (GDP).

The airlines and high-end GA will not be able to equip with improved avionics as early as previously planned, which means that there is a greater need for procedural and airspace changes to prepare for increased traffic flows. Because the major airlines have pulled back on their schedules, regional airlines are filling gaps in service. As travel increases, delays will increase without the FAA's continuing efforts to improve efficiency and capacity. Figure 3 shows the expected recovery sequence for FAA and airline investments.

Figure 2 Gross Domestic Product and Revenue Passenger Miles for 1960 through 2000

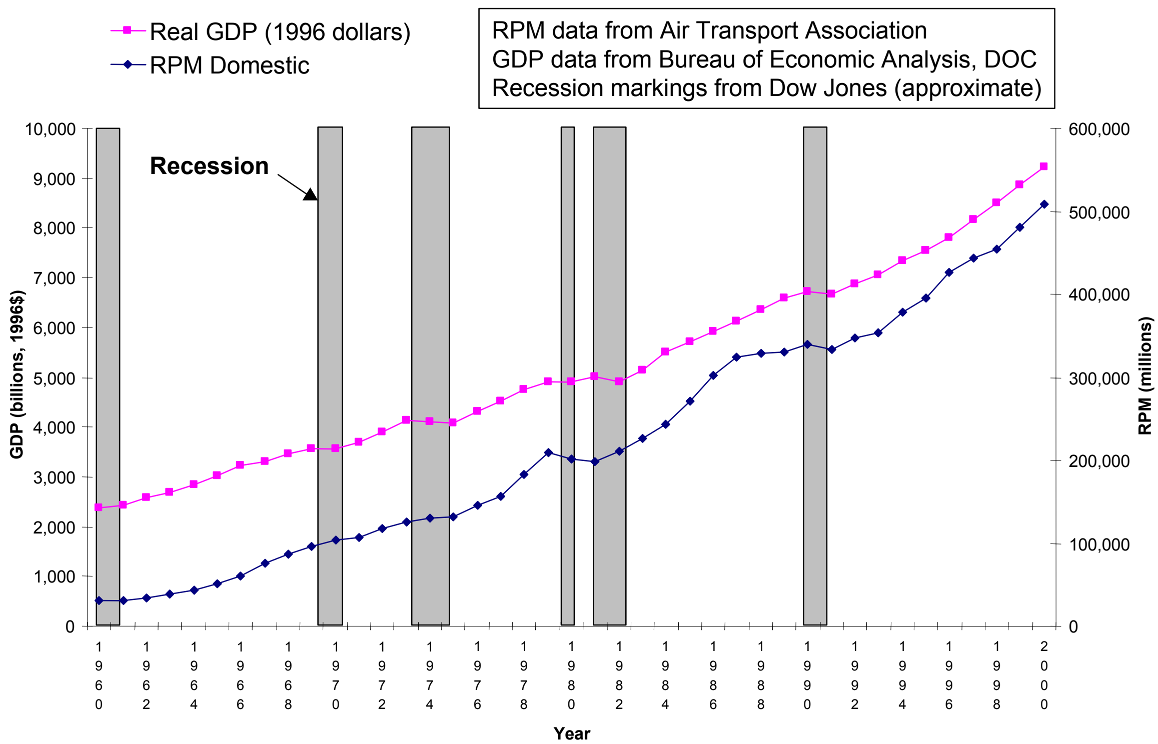
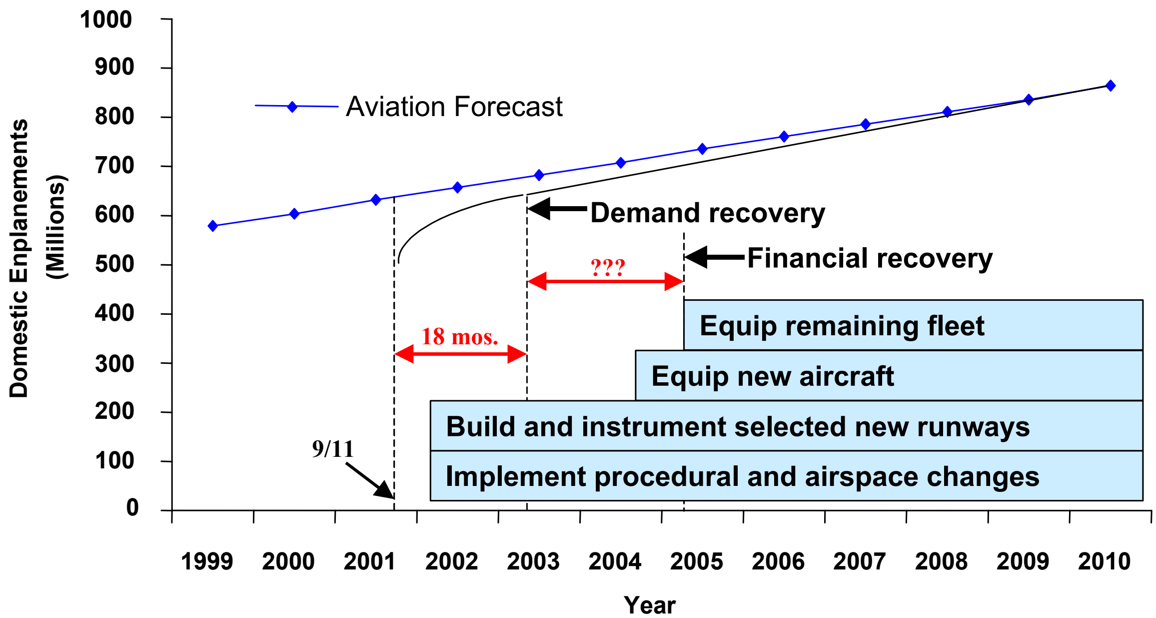


Figure 3 Forecasted Demand and Demand Recovery – Strategy for Airline Equipping for National Airspace System Modernization



The CIP has been adjusted to reflect the changes to Version 4.0 of the OEP. The FAA continues to fund work that defines requirements and continues testing of data link, digital communications, Safe Flight 21, and automated dependent surveillance – broadcast (ADS-B). Satellite-based navigation continues to be a high priority. The FAA will proceed with regulatory changes on domestic reduced vertical separation minima (DRVSM) in the high altitude airspace. The addition of chokepoint sectors to reduce workload that contribute to delay will be completed by June 2002. Airspace and procedural changes will continue. National data link implementation is deferred beyond the Miami Center test site from 2003 until 2005.

The new Detroit runway opened as planned on December 11, 2001. For the benchmarked airports, improvements at Atlanta will likely be delayed, Charlotte's plans for a new runway are under review, Minneapolis will be delayed one year, but Houston, Miami, and Orlando are moving forward as planned. Wherever a new runway at the 31 benchmarked airports is planned, the FAA capital investments are included in the CIP prior to runway commissioning so that FAA work does not delay full use of these critical new runways.

The user request evaluation tool (URET), proved to be beneficial in managing flight diversions on September 11, 2001. After review of the program, the FAA has decided to deploy URET at all en route centers by the end of 2005. Seven centers will have URET by the end of Free Flight Phase 1 this year, and the remaining 13 centers will receive the tool between 2003 and 2005.

2.0 Reducing Aviation Accidents and Fatalities

This section covers the safety investment category introduced in section 1.3. The CIP covers critical aviation safety activities defined jointly by the FAA and the aviation user community. Included are capital investment support of Safer Skies, safety risk mitigation strategies (Safe Flight 21, reducing controlled flight into terrain, surface movement safety, surveillance, and weather improvements) and information security. The BLIs in Appendices A and B, whose primary outcome or output goal addresses safety, are grouped in this investment category.

The reduction in aviation accidents and fatalities flows from the FAA Strategic Plan's safety performance goals:

- **Fatal Aircraft Accident Rate:** By 2007, reduce the U.S. commercial aviation fatal accident rate per aircraft departure, as measured by a three year moving average, by 80 percent from the three-year average for 1994-1996.
- **Overall Aircraft Accident Rate:** Reduce the rate per aircraft departure.
- **Fatalities and Losses by Type of Accident:** Reduce the number of fatalities and losses from accidents that occur for each major type of accident.
- **Occupant Risk:** Reduce the risk of mortality to a passenger or flight crewmember on a typical flight.

The FAA's strategies for accident prevention strategies have two parts that involve capital investment. The first is Safer Skies—working with the aerospace community to analyze the recurrent causes of accidents and develop and implement interventions to reduce or prevent them. The second is risk mitigation within acquisitions and changes in procedures.

2.1 Safer Skies

Safer Skies uses partnerships between the FAA and the Aviation Industry. Partnerships include ongoing analytical programs with the industry to determine the root causes of accidents and then the application of operational or technological improvements to prevent accidents and fatalities. Information about Safer Skies can be found at http://www.faa.gov/apa/safer_skies/saftoc.htm.

The Safer Skies Agenda places priority on the leading causes of accidents or incidents in three areas—commercial airlines, GA, and cabin safety. Once these root causes are understood, the intervention strategies are evaluated to determine which strategies will impact safety the most. As the interventions are initiated, progress and effectiveness are tracked using metrics. Therefore, Safer Skies uses data in new ways, which allows flight crewmembers, operators, manufacturers, and the FAA to focus on breaking causal chains and take action before an identified chain of events leads to an accident. From these root causes come solution sets that involve capital investments.

The FAA is concentrating on a limited number of specific safety areas:

- The **commercial aviation initiative—** focuses on controlled-flight-into-terrain (CFIT), loss of control, uncontained engine failures, runway incursions, approach and landing, and weather.
- The **GA initiative—** focuses on pilot decision-making**,** loss of control, weather, CFIT and survivability, and runway incursions.
- The **cabin safety initiative—** focuses on passenger seat belt use, carry-on baggage, child restraints, and passenger interference issues. Work in this area has now been completed.

2.2 Safety Risk Mitigation

A second part of the safety strategy is risk mitigation. Investment in risk analysis and mitigation is a major element of new FAA capital programs. Safety risk mitigation seeks to develop and field systems, technologies, and procedures that target high-risk hazards in the NAS, and develop an integrated safety risk management process that ensures hazards are identified, assessed, and managed to reduce risk. Safety risk management is a proven method to reduce mishaps, and is applicable to the complete spectrum of the NAS, including commercial aviation and general aviation. This method is based on the principle that most, if not all, hazards to an operation or system can be found and controlled before the operation starts. The FAA is developing and deploying tools for defining risk in the acquisition of new systems. Policies are in place to ensure that the new systems adhere to the following requirements:

1. Designed according to requirements derived from data driven safety risk assessments.
2. Integrated with the NAS.
3. Designed by making data driven choices using safety risk as a metric.

The FAA is acquiring proven and, in some instances, leading edge technologies designed to reduce the risk associated with the highest safety hazards in the NAS. The CIP supports work that prevents runway incursions, mid-air collisions, flight into hazardous weather conditions, and CFIT.

2.2.1 Controlled-Flight-into-Terrain

The first mitigation effort for commercial airlines—to reduce uncontained engine failures and instances in which planes are flown into the ground (CFIT)—is nearing formal completion. A directive to order more focused checks of critical engine parts was issued in 2001.

A final rule was issued in March 2001 that required all airplanes with turbine engines and six or more passenger seats to carry a terrain avoidance warning system (TAWS). TAWS uses a computer database to display terrain ahead of an aircraft's path, and warn the aircrew of an impending collision with the ground.

The strategy to reduce CFIT also includes deploying more distance measuring equipment (DME) and visual approach aids at airports. These navigation aids reduce CFIT by increasing pilot situational awareness. Deployment and sustainment of DME is designed to help pilots orient themselves relative to the distance from the airport. This capability can be replaced with the global positioning system (GPS) as equipage grows. Funding increases for ground-based electronic and visual navigation aids in FY 2003 through 2007 directly support the Safer Skies Agenda by providing landing guidance at night and in lower visibility conditions.

A significant element of reducing CFIT is to provide vertical guidance during an approach to the airport. GPS, augmented by either a local area augmentation system (LAAS) or wide area augmentation system (WAAS), will improve lateral navigation (LNAV), vertical navigation (VNAV), and landing. The primary outcome of GPS with WAAS is to provide instrument approach procedures at the majority of the nation's public use airports with vertical course guidance. In August 2001, WAAS passed its one-year anniversary for providing augmentation to GPS. In December 2003, WAAS will attain initial operational capability (IOC) to deliver LNAV and VNAV approaches.

2.2.2 Safe Flight 21 Leading to Deployment Decisions

Two of the current FAA projects under Safe Flight 21 provide increased communications, navigation, and surveillance capabilities. New technology is improving the availability of services to pilots, and is increasing situational awareness for both the controller and pilot. The Capstone Project, an alliance of aviation users and the FAA in Alaska, has provided insights on improved situational awareness through the use of GPS, cockpit display systems that include terrain maps, and air traffic control automation capabilities. The Ohio Valley Project validated the advances made in Capstone, and shows that this technology would provide capacity and efficiency applications for cargo users. Key to the Ohio Valley work is defining the operational concepts for surface movement applications of technology, terminal surveillance requirement development, and integration of surveillance information.

In FY 2003, an investment decision, based on safety improvements, will be made on statewide application of the Capstone technologies in Alaska. An investment decision will also be made on deployment of ground infrastructure for use of ADS-B at selected delay-constrained airports for surface movement safety and efficiency applications. Since ADS-B is dependent upon user equipage, the location of airports and airspace for the use of this new surveillance technology will need to be timed to mutual FAA and user investments.

2.2.3 Surface Movement Safety

An example of surface movement safety is the development of improved airport surveillance detection equipment (ASDE) model X technology. This system is intended to reduce the number and severity of the risk associated with runway incursions. The ASDE-X provides the controller with improved surveillance at 25 airports not currently covered by the ASDE-3 and the airport movement safety system (AMASS). Initial deployment of ASDE-X will not include safety logic. Safety logic (like AMASS) will be added after surveillance performance is established. In FY 2003, the Key Site (Milwaukee) will reach IOC with ASDE-X, and four additional sites will be installed. Based on performance of ASDE-X a decision will be made in 2003 to retrofit the 34 ASDE-3/AMASS sites by upgrading the ground infrastructure at airports that support both multilateration and ADS-B on the surface terminal airspace.

2.2.4 Surveillance Systems

Surveillance addresses safety outcomes by providing the critical information for separation of aircraft and detection of hazardous weather. The reliability of surveillance systems and continued improvement is important to safety, security, and efficiency goals. Primary radar and secondary beacon surveillance funding supports sustainment through service life extensions and replacement of older terminal radar and en route secondary surveillance beacons. The surface movement radar (ASDE-3) and the airport surveillance radar model 9 (ASR-9)/mode-select (Mode-S) are undergoing service life extensions. The ASR-11 is planned to replace older radar units. The replacement of air traffic control beacon interrogator model 6 (ATCBI-6) will be completed in 2006. The FAA will sustain long range primary radars that were going to be decommissioned and now will be retained. The DoD and the FAA are working jointly to identify the future mix of primary radar and, by June 2002, will have defined radar requirements. It is expected that the DoD will fund the replacement of the radar required for homeland defense.

Multilateration, a new feature of surveillance, measures the time of arrival of signals from aircraft to multiple ground receivers and calculates aircraft position. This technology is first used for ASDE-X. The infrastructure for multilateration also supports ADS-B. By adding ASDE-X infrastructure at additional airports, the NAS gains integration of surveillance, and provides the ability to support ADS-B technology insertion. The decision on locations and the extent of use of ADS-B will be made in 2003, and funding for this future surveillance infrastructure will begin in FY 2004.

2.2.4.1 Terminal Weather Risk Mitigation

The last terminal Doppler weather radar (TDWR) will become operational in 2002; in FY 2004, product enhancements and service life extension support will begin. Upgrades to next generation weather radar (NEXRAD) will be completed in 2006. Both the TDWR and the NEXRAD provide critical weather information to enhance safety and efficiency. Within the NEXRAD program is a new capability that combines NEXRAD data and the safety features of the integrated terminal weather system (ITWS) that is being deployed to larger airports.

In FY 2003, 24 production ITWS units will be delivered, adding to the four scheduled for delivery in FY 2002. By FY 2004, all systems will be operational and product improvements will be initiated to improve prediction time for severe weather. ITWS consolidates terminal weather information at 45 high-activity airports to improve controller situational awareness of severe weather. In FY 2003, a new weather capability, the medium intensity airport weather system (MIAWS), begins production system deployment following prototype testing in FY 2002 at Little Rock, AR, and Springfield, MO. This system is a scaled-down version of ITWS that integrates weather information and alerts controllers to severity, location, movement, and expected duration of hazardous weather. MIAWS will be deployed at 40 airport locations.

2.2.5 Information Security

The consequence of cyber attacks to disrupt NAS operations or insertion of rogue code within automation systems can be a safety hazard. It is not feasible to provide complete cyber protection for the NAS; however, the risk associated with information security failures must be reduced to acceptable levels. Priority systems must be protected against common threats and vulnerabilities. The FAA has the necessary policy for information security presently in place, has defined methods to identify risks, has reviewed many systems in the NAS, and has taken appropriate remedial actions. However, due to the age and diversity of systems, much work must be done. Following the attacks of September 11, 2001, physical security has been the priority,
e.g., passenger and baggage screening, airport security, FAA facility security, and personnel security. In FY 2002 and FY 2003, funding focuses on information and communications systems that can create high safety consequences in the case of an attack and subsequent denial of services. Within their programs, new systems will build the necessary information security funding to safeguard services.

3.0 Improving Efficiency of the Air Traffic Control System

This goal category addresses increasing efficiency in the NAS, as defined in the OEP. The OEP is the FAA's commitment to meet the air transportation needs of the United States. Since the OEP supports both the efficiency and capacity goals of the agency, the CIP discusses contributions of the OEP to both goal areas. In this section, arrival and departure rate improvements, reducing en route congestion problems, and dealing with en route severe weather are discussed. In addition, improvements in terminal automation are provided since they represent the precursors to improving efficiency. Radio spectrum efficiency is addressed through the transition to digital air/ground communications.

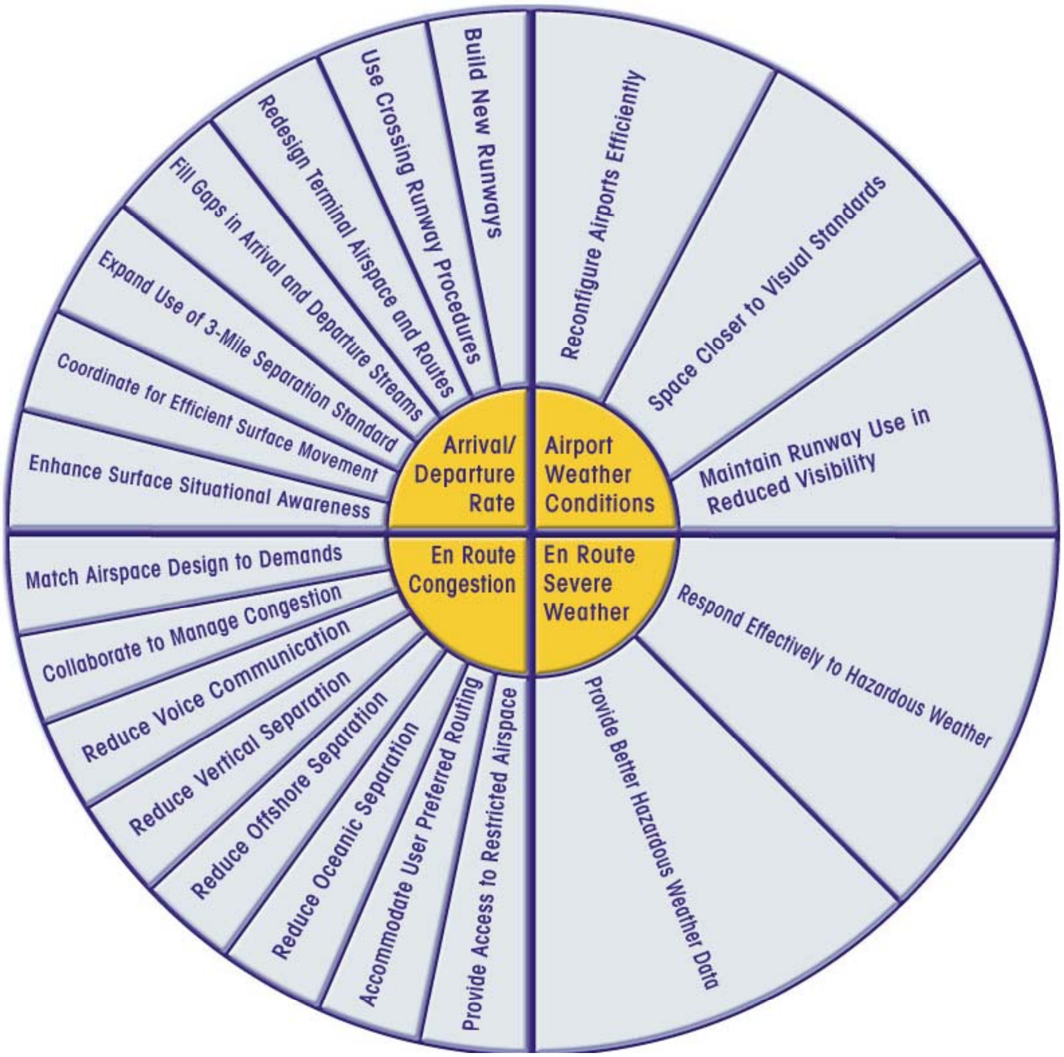
The goals of the OEP are to:

- Describe the operational evolution of the NAS as it relates to increasing capacity while maintaining safety.
- Derive a set of credible initiatives that focus the aviation community on solutions for the 2002-2010 timeframe.
- Link these initiatives to a timetable and specific activities (e.g., procedure development, avionics packaging, and system acquisition) required of each member of the community.

Key capital programs to improve efficiency include OEP solution sets that increase predictability of services to the users, add flexibility to support their needs, and reduce the workload for the controller and pilot. The OEP focuses on the delivery of capabilities and services, not acquisitions. As a result, integration across LOBs and with the aviation community is necessary.

The FAA has invited the aviation community at large to participate in problem identification and solution validation. Each stakeholder has unique objectives, concerns, and investments in the NAS. Community agreement on the OEP clarifies the responsibilities of individual members of the aviation community and helps to establish a climate of accountability throughout the industry. To that end, the FAA has assigned a single point of accountability (with a support team from across all LOBs) for each solution set in the plan. Figure 4 shows the solution sets for the OEP. Improvements are targeted at increasing the airport arrival and departure rate, sustaining operations in airport weather conditions that degrade capacity and efficiency, responding effectively during severe en route weather conditions, and reducing en route congestion. Details about the solution sets may be found on the OEP web site at http://www.faa.gov/programs/oep.

Figure 4 Operational Evolution Plan Solution Sets



3.1 Arrival/Departure Rates

Programs funded in the CIP for terminal airspace and route redesign develop area navigation (RNAV) arrival and departure routes that use airspace more efficiently and reduce communications workload. These RNAV routes increase on-time departures, improve airport throughput, and improve predictability of services. Communications workload will be reduced between 17 and 42 percent, depending on the airport.

Decision support tools, funded in Free Flight Phases 1 and 2 and Air Traffic Management (ATM), are improving the sequencing of arrivals and departures. The Departure Spacing Program (DSP) is installed in New York and will be completed in Washington and Boston Air

Route Traffic Control Centers (ARTCC) in FY 2002. The single-center version of traffic management advisor (TMA) was implemented under Free Flight Phase 1, serving Dallas-Ft. Worth, Minneapolis, Denver, Miami, Oakland, Los Angeles, and Atlanta ARTCCs. These seven sites will be sustained during Free Flight Phase 2.

Airspace redesign and terminal facility improvements are being made to expand radar coverage and improve efficiency through reduced separation. The locations include Philadelphia, Santa Barbara (Central California), Southern California, Northern California, Phoenix, Cincinnati, Seattle, Charlotte, and Chicago. Terminal consolidation work is underway at Potomac (2003), Boston (2004), Atlanta (2005), and Houston is in design. Design work is underway to modify the airspace in the New York area. These measures are being taken to provide greater flexibility and use three-mile separation standards over more congested airspace.

As noted in section 2.2.1, Safe Flight 21 is also involved in increasing efficiency in surface movement, ranging from improved surveillance to cockpit moving maps to improve pilot situational awareness and reduce taxi delays.

3.2 En Route Congestion

Considerable NAS efficiency is lost when severe convective weather obstructs the flow of traffic or demand exceeds available services, leading to en route congestion. The enhanced traffic management system (ETMS) provides the technology that builds on yearly lessons learned and modification of procedures to refine strategic management of traffic. Web-based technologies are being used and developed at the Air Traffic Control System Command Center (ATCSCC) and the airline operations centers (AOC) to improve collaboration on weather reroutes and holding strategies to manage demand when weather reduces NAS capacity and efficiency.

The application of controller-pilot data link communications (CPDLC) will be tested at the Miami ARTCC through September 2002, with American Airlines serving as the launch partner. Development of an expanded message set for CPDLC will first be deployed at Miami in December 2005. National deployment to all centers will follow. Data link reduces controller and pilot workload, voice congestion, and improves the flow of traffic in the en route airspace.

In order to accommodate user preferred routing, the controllers needed a tool to take requests and look ahead at potential traffic conflicts. Thus, URET was developed, and is currently being deployed at seven centers. Funding is provided in this CIP to extend the deployment of URET to all 20 en route centers by the end of 2005. By the end of FY 2002, URET will be in Cleveland, Chicago, Kansas City, Washington, Atlanta, Memphis, and the Indianapolis ARTCCs. Daily use will begin at an additional four centers in FY 2003 and the remaining nine centers in FY 2004.

3.3 En Route Severe Weather

When severe weather restricts access to portions of the en route airspace, efficiency is lost. Funding is provided in the research and development (R&D) appropriation for weather research. The CIP provides funding for implementation of solutions as enhancements to weather products that forecast severe weather and for the dissemination of these products within the FAA and to pilots and flight operations centers. Funding is provided for traffic flow management infrastructure (TFM-I), ITWS, next generation weather radar (NEXRAD) improvements, and the weather and radar processor (WARP) for product improvements. As part of the Free Flight Phase 2 program, funding is provided as part of the collaborative decision making activities to engineer, develop, and implement capabilities that mitigate the effects of severe weather on capacity.

A new technology, called the corridor integrated weather system (CIWS), will be evaluated during the 2002 convective weather season. The CIWS uses short-term weather forecasts on the time-scale of less than one hour within the corridor of heaviest air traffic between Chicago and the Atlantic coast. CIWS links together information from the ITWS to show a more regional picture of changing weather conditions. The prototype will be sustained through FY 2003. Selected ITWS units must be deployed before operational use of CIWS can be implemented. The CIP provides prototype funding for CIWS is within the NEXRAD budget line.

3.4 Terminal Automation

Improved efficiency in terminal operations is being made through installation of modern displays and automation to better integrate terminal and airport operations. The output for the standard terminal automation replacement system (STARS) is to provide a digital automation system capable of meeting expanding air traffic control needs in terminal airspace. In FY 2003, the FAA will procure 29 FAA and 19 DoD systems, assume delivery of 18 FAA and all 19 DoD systems, and deploy associated color displays to terminal and tower locations. Between FY 2004 and 2007, the FAA will deliver 232 STARS units. The program has experienced significant improvements since the creation of the FAA Terminal Business Service (ATB), the prototype performance-based organization (PBO). The Terminal Business Service is fielding other automation and display systems to both terminals and towers, accommodating service-life extensions and managing the automation transition.

3.5 Air/Ground Communications Infrastructure Changes to Gain Efficiency

The next generation communications system (NEXCOM) will deliver the multi-mode digital radar (MDR) and commission its first site in FY 2003. The contract for national deployment of the MDR is expected in 2005, and transition to digital radios will begin across the NAS in 2007. These radios will operate in analog mode and switch over to a digital mode that is more efficiently manages spectrum use. A significant benefit is the recovery of the much-needed very high frequency (VHF) spectrum. In the transition to digital air/ground voice, this VHF spectrum will be used to support other NAS communications functions, leaving NEXCOM to support data link.

4.0 Increasing Capacity of the National Airspace System

This section describes measures being taken to add capacity through capital investment by the FAA. Increasing airport arrival and departure rates and retaining capacity as weather deteriorates at these airports is part of the airport capacity solution. The FAA is requesting a consolidation of the navigation line items to begin providing a mix of satellite-based and ground-based navigation and landing capabilities. Oceanic and offshore capacity is increased through reductions in separation.

The first outcome for this goal category is to increase airport throughput by either adding new runways or reducing the gap between capacity in visual conditions and capacity in instrument meteorological conditions. Between FY 2003 through FY 2007, there are 12 new runways planned at the 31 benchmarked airports. While the airport operator decides when to construct and commission new runways, it is important for the FAA to invest in airspace and procedural changes, acquire necessary air traffic control systems, and provide necessary infrastructure in a timely manner. The FAA's Regional Administrators now have an effective program scheduling capability to assure accountability and ensure that capital investments are made in time for airport runway commissioning. While the emphasis is on the 31 benchmarked airports in the OEP, other airports will also receive added capacity through improvements to approach procedures.

The second outcome is to increase the capacity of offshore, and oceanic airspace to accommodate increased throughput by improving automation, communications, navigation, and surveillance.

4.1 Increase Arrival/Departure Rate

The OEP aligns the necessary F&E, airspace and procedural changes, and operational personnel to support planned new runways at the benchmarked airports. The new Detroit runway opened on December 11, 2001, adding a 25 percent increase in visual capacity and 17 percent in instrument capacity. In 2003, Denver, Miami, Orlando, and Houston will add new runways, increasing capacity between 10 and 34 percent in visual conditions and four to 37 percent in instrument conditions. All will open with sufficient FAA investment to produce the full benefits defined in the airport's environmental impact statement. Capital requirements vary between instrument approach navigational equipment to additional hardware to support added controller positions and are included in the CIP.

Increasing the airport throughput at delay-constrained airports in marginal visual or full instrument conditions requires investment in GPS, as augmented by WAAS and/or LAAS, and the addition of traditional instrument landing systems (ILS) for improved low-visibility approaches and landing. In FY 2003, approximately 30 ILSs will be installed, GPS/WAAS will be operational for LNAV/VNAV approaches, and GPS/LAAS procurements will be initiated. LAAS has the capability of adding precision approaches to all runway ends for the airport that the system serves.

4.2 Retaining Capacity in Airport Weather Conditions

As weather deteriorates, the airport begins to lose arrival and departure opportunities, causing the capacity of the airport to fall. The outcome of this solution set is to sustain the visual capacities of the airport for a longer period as weather deteriorates and to use existing runways for low-visibility operations. As airport throughput declines, delays accumulate at both the airport and throughout the NAS. Adding new instrument procedures to the existing runways helps to sustain airport visual capacities for a longer period of time as the weather deteriorates.

A significant improvement will be realized as GPS approaches (as augmented by either WAAS or LAAS) are deployed. New capabilities will be realized through the provision of instrument approach procedures that allow airport operations in reduced visibility. The WAAS augmentation will support a large number of new runways that currently have non-precision approaches or lack an approach completely. Satellite-based navigation supports expansion of general aviation capacity and adds safety as discussed in Section 2.2.1.

In FY 2003, WAAS will be operational, LAAS will start deployment, ILS will continue with its installment, and visual navigation aids to support instrument approaches or Safer Skies will be deployed. Funding for navigation aids have been increased. The satellite navigation and landing backup strategy is to be defined in FY 2002, and adjustments will be made in sustainment and replacement for en route navigation aids like the VHF omnidirectional range (VOR) system and DME. Tactical air navigation (TACAN) will continue to serve as the primary navigational aid for the DoD.

4.3 Consolidation of Navigation Line Items

In FY 2003, the FAA is proposing to consolidate all navigation and landing BLIs. This reflects the need to enable management flexibility as the FAA and DOT determines how to best deploy the mix of satellite and ground-based navigation and landing systems. Table 1 shows the changes in BLIs to three line items for ground-based navigation systems. Appendix B shows the goals for individual programs. The funding has been combined into a single line item in Appendix C. Baselined program variances will still be tracked at the project level.

Table 1 Budget Line Item Consolidation for Navigation/Landing Aids

FY 02 BLI	Program Title
1D01/1F01/ 2D12	Local Area Augmentation for Global Positioning System
1D02/1F01/ 2D08	Wide Area Augmentation for Global Positioning System
2D01	Very High Frequency Omni-Directional Range/Distance Measuring Equipment/Tactical Air Navigation Network
2D02	Instrument Landing System Establish/Upgrade
2D05	Approach Lighting System Improvement Program
2D06	Runway Visual Range Establish
2D07	Distance Measuring Equipment – Sustain
2D09	Non-Directional Beacon Facilities – Establish/Sustain
2D10	Visual Navigation Aids Establish/Expand
2D11	Visual Approach Slope Indicator Replacement – Replace with Precision Approach Path Indicator
2D14	Navigation and Landing Aids Service Life Extension Program
2D15	Long-Range Navigation – C System Upgrade/Modernization (LORAN)
2D17	Navigation and Landing Aids – Improve
2D18	Transponder Landing System

4.4 Expanding Offshore and Oceanic Capacity

Improvements in communications and navigation are reducing offshore separation in the Gulf of Mexico (GOM). Communications is being expanded for high altitude use through a combination of long-range VHF ground stations and floating buoys. With improved VHF communications, aircraft separation can be reduced, increasing capacity. The use of RNAV procedures is also reducing separation between aircraft. Funding in the CIP supports both communications and development of RNAV procedures. In 2004, automated flight data transfer will start between Mexico and the United States, reducing controller workload.

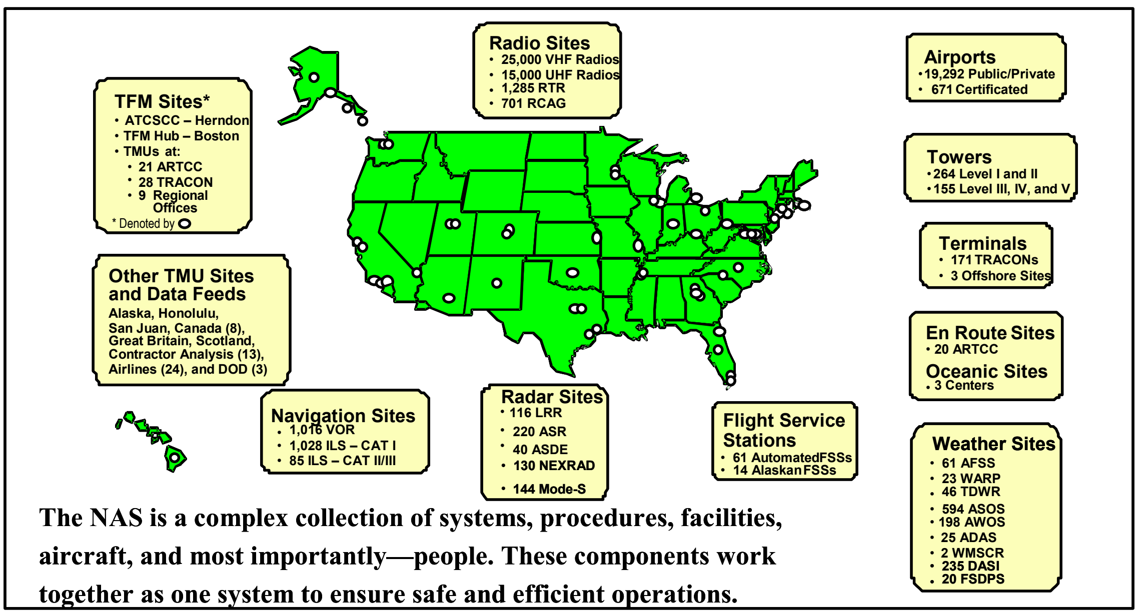
The CIP continues funding of the Advanced Technology and Oceanic Procedures (ATOP) Program. This program modernizes oceanic air traffic control systems, deploying an integrated system in addition to new air traffic control procedures at Oakland, Anchorage, and New York from 2003 to 2006. The outcome enables progressive reduction in separation to 30 miles longitudinal and 30 miles lateral in oceanic airspace, which will significantly increase both capacity and efficiency.

5.0 Improving Reliability of the National Airspace System

Reliability of service is critical to providing safety, efficiency and capacity improvements. The continuing investment in automation changes, communications, facilities, and facility infrastructure like power improvements are necessary.

The modernization of the NAS is on a magnitude not associated with any other aviation system in the world. The variety of equipment (1950s to 21st century technology), over 41,000 NAS operational facilities, and the vast array of users—from air traffic controllers to commercial airlines to the DoD—demands that the NAS delivers capabilities consistent with the expectations of the users. Figure 5 illustrates this diversity and the challenge the FAA faces in improving reliability of services and capabilities.

Figure 5 National Airspace Complexities



Modernization to improve reliability occurs in varied forms. Equipment at an unmanned site may be changed to accommodate new remote maintenance capabilities. Communications may migrate from electrical wire to fiber optics. Buildings may need to be rehabilitated to extend facility life, improve security, and/or accommodate growth. Automation needs to be replaced to increase reliability, avoid obsolescence, and allow additional functionality. Equipment may need to be upgraded to add access, such as is the case with homeland defense. These initiatives share a common outcome—providing a NAS that is more dependable, more efficient to operate and maintain, and more effective in delivery of services to NAS users.

5.1 En Route Automation

Four major activities are underway within en route automation. Each has a common output to provide the NAS users, controllers, and technicians with automation to improve services and reduce workload. En route automation changes address more than supportability of existing hardware and software. Automation changes are needed to build capabilities for growth in air traffic demand, modifications in airspace use, and improved communications, navigation and surveillance capabilities.

The host computer system (HCS) requires continuous software adaptation and modifications to deliver new capabilities such as reduced vertical separation minimums at and above flight level (FL) 290. Changes are being made to incorporate data link capabilities and provide software to support free flight tools. Peripheral equipment such as the flight data input and output (FDIO) devices are being replaced. Funding through FY 2005 completes the host/oceanic computer replacement (HOCSR). Oceanic equipment is being sustained while the FAA transitions to ATOP, as described in section 4.4 of this plan.

A new display processor has been developed for the direct access radar channel (DARC), which provides an independent backup in the event of an HCS or power failure, and a control processor will be completed in FY 2002. In FY 2003, the control processor will be installed, and conflict alert and Mode-C intruder alerts will be added to DARC. Other enhancements will continue to provide a robust backup capability prior to transition of the HCS software modernization.

The en route communications gateway (ECG) is the interface between en route automation and communications entering and leaving the automation systems. A contract was awarded for development in FY 2001. In FY 2002, equipment will be in place for testing and training and at the first Key Site (Seattle) will begin in late FY 2003.

A significant challenge to en route automation is the replacement of the obsolete and difficult to maintain en route automation software. This work extends beyond sustainment and adaptation, and creates the future of en route services and capabilities. The en route automation modernization (ERAM) will provide modular changes in software and added functions through FY 2007. In FY 2002, requirements will be defined and a contract awarded to begin the integration of commercial software and development of new functions. The funding for ERAM will increase substantially in FY 2005 to support production and implementation.

5.2 Telecommunications

Telecommunications includes voice switches, servers, demarcation equipment, and leased/owned communications connectivity between NAS facilities. The outputs include a mix of leased communications services and FAA equipment replacements. In FY 2002, the contract for the future telecommunications infrastructure (FTI) will be awarded. In FY 2003, the FAA will begin the transfer of the existing leased inter-facility NAS communications system (LINCS) and portions of the national airspace data interchange network (NADIN) to the new FTI.

The NAS is evolving into a substantial information system with growing communications requirements. The movement of information, ranging from target information from surveillance, to airspace flight restrictions, to weather graphics, requires increases in owned and leased circuits, communications switches, servers, routers, and the necessary information security protection that this increased connectivity brings. Telecommunications costs will rise, as more information must be exchanged between more systems and users of the NAS.

5.3 Facilities Modernization

There are over 400 towers, 171 terminal facilities, 21 centers, three oceanic centers, 75 flight service stations (FSS), and thousands of unmanned buildings housing communications, navigation, and surveillance equipment. There are nine regional offices, the FAA Aeronautical Center (FAAAC), and the FAA Technical Center (FAATC). Like any property owner, the FAA must re-capitalize its investment in buildings, replace roofs, sustain heating and air conditioning, maintain access roads, and improve survivability from earthquakes and weather related events. The FAA must increase the security of FAA facilities. Unlike many business enterprises, the FAA must maintain 24-hours, seven days-a-week operations, and conduct facility construction at the same time.

Space must be modified to accommodate new equipment, sectors must be added to relieve congestion, and new tower and terminal construction must, in many cases, be timed to other development projects managed by the airport operator. The FY 2003 budget provides over $313 million for facility modernization and sustainment. By FY 2005, this cost will grow to over
$376 million. Aging infrastructure is one of the consequences of operating in a technologically accelerating air transportation system.

5.4 Power Systems Support

One of the more critical elements of NAS performance is adequate, sustainable power. The quality of commercial power is declining, and sophisticated equipment is more vulnerable to power problems. This issue requires the FAA to provide updated power conditioning and stand-by power to maintain high availability of systems in the NAS. The FAA must install uninterruptible power systems (UPS) at 176 terminal facilities, replace critical power batteries and make power upgrades at 21 centers, improve power cabling at 77 high-activity airports, and replace 2,250 engine generators. The FAA has baselined the power systems sustainment through FY 2003, and will add an additional 100 locations to be upgraded starting in FY 2004.
By FY 2007, an estimated $100 million will be needed to continue sustainment of power systems.

6.0 Improving Efficiency of Mission Support

This goal category focuses on the funding used to provide support to NAS operations and capital development. While some funding for leases are fixed, there are opportunities to leverage technology development to improve FAA efficiency. Basic support services are provided to sustain reliable NAS services.

This category consists of the following:

- Laboratory support for engineering development, test, and evaluation
- Environmental actions
- Occupational safety and health (OSH) and hazardous materials (HAZMAT) work at facilities
- Information technology (IT) development
- Asset supply chain management (ASCM)
- Facility physical security
- Distance learning and training development
- Leases and logistical support

Another aspect is in the engineering support to design the evolution of the NAS. This aspect includes funding for system engineering, the Center for Advanced Aviation Systems Development (CAASD), the NAS implementation support contract (NISC), and the technical support services contract (TSSC). System engineering and CAASD focus on NAS Modernization, Architecture development, planning, and decision-making about the evolution of the NAS. The NISC and TSSC are designated for design and implementation of NAS improvements.

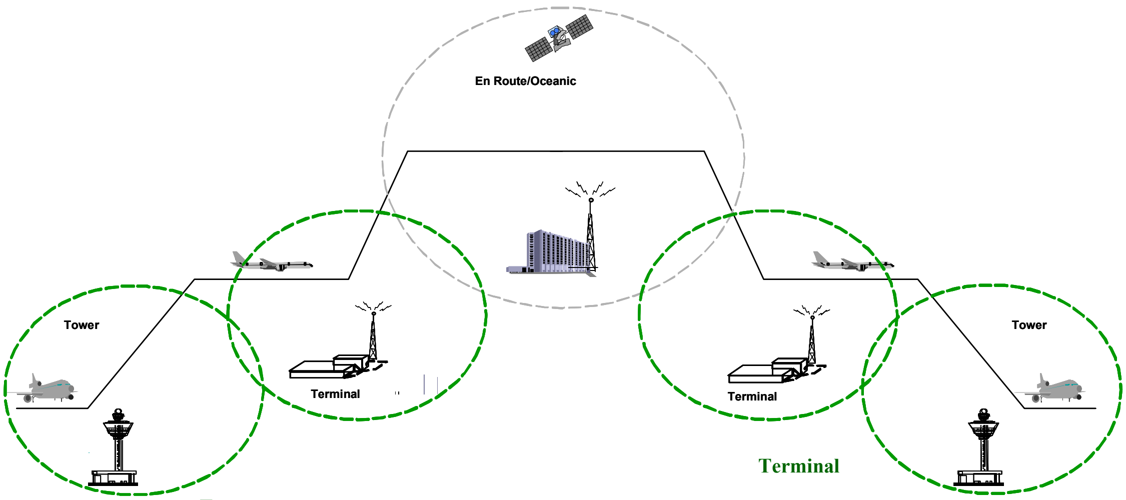
7.0 Air Traffic Organization – Terminal Business Service is Now Operational

The FAA has established a PBO to manage terminal area air traffic control capabilities. The ATB focuses on delivering air traffic control service capabilities, not just on delivering equipment. Managing the capabilities does not end once a piece of equipment is fielded—the responsibility and accountability for providing the service continues—ensuring that air traffic controllers and system specialists are able to provide the service to the flying public.

The FAA has developed this business-oriented organization that focuses on the terminal infrastructure and services. The ATB was designed to implement best business practices to manage the resources used in the movement of air traffic in the terminal environment. The terminal environment consists of the geographic and airspace volume used for the enplanement of passengers, and the departure and approach phases of flight, and is the most densely populated airspace in the NAS. Figure 6 shows the domain responsibility for the ATB.

The business approach also accounts for the tools used in the movement of air traffic.
The elements of surveillance, automation, facilities, and personnel were consolidated under one management unit. This grouping of outputs ensures that all facets of the NAS used to move air traffic in the terminal domain will be managed by one organization.

Figure 6 Terminal and Tower Domains under Responsibility of the Terminal Business Service



Tower

Tower controllers manage and control airspace within approximately five miles of an airport, including taxiways and runways. Tower controllers control ground operations and departing and landing traffic. Traffic is passed between the tower and terminal controllers. Towers are provided with flight planning information by the en route computer system. Weather information is available from airport sensors and weather processing and distribution through communications links.

Terminal

Terminal facilities provide air traffic control services for an airspace located approximately 40 miles from an airport and usually below 10,000 feet in altitude. These dimensions are changing to extend more flexibility in using the airspace. The terminal controller establishes and maintains the sequence and separation of aircraft taking off and landing or operating within the terminal airspace. Terminals are interconnected with local towers and provided surveillance and position data of aircraft under terminal control to displays within the tower. Selected terminal facilities are interconnected to the traffic flow management systems at the Air Traffic Control System Command Center. Flight planning information is provided from the en route computer system. Weather data are provided from weather processing and distribution through communications links.

This business approach is inclusive of budgets, projects, and initiatives, and is designed to make the terminal environment cost effective and efficient. The primary mission of ATB is to provide integrated terminal air traffic capabilities in the most operationally efficient and effective means possible, commensurate with the FAA's strategic performance outcome and output goals. The ATB has defined strategic objectives to support the evaluation of competing initiatives. The ATB strategic objectives are comprised of the following:

- Address critical safety and security needs in the terminal air traffic control environment where the impact to the economy and general public is greatest.
- Reduce the risk to service by effectively sustaining existing infrastructure.
- Provide new terminal air traffic control capabilities.

As an example of the business approach, the ATB is focusing its efforts on minimizing risk and meeting needs where the impact to the public may be greatest. The top-level priority of the ATB modernization efforts is to resolve safety and efficiency at the busiest U.S. airports. The NAS requires a combination of modern technology and additional runways. The ATB, in partnership with airport operators, is helping to plan and develop new runways to accommodate increased aircraft operations, and use new technologies to resolve congestion while meeting environmental requirements.

More specifically, the priority ATB modernization efforts are directed at the following:

- Eight pacing major metropolitan airports (airports that experience a delay of greater than 15 minutes on three percent or more of their operations—prior to September 11, 2001),
- Thirty major metropolitan terminal areas, and
- The remaining terminal/tower areas (approximately 430).

In the FY 2003 budget submittal, there is a consolidation of BLIs under the ATB. This consolidation enables greater management flexibility to address FAA performance goals. Appendix B shows the goals for individual projects, but the funding has been combined into the new categories in Appendix C.

There will be no change in requirements for the ATB to manage projects to baseline cost, schedule, and performance targets. Baselined program variances will therefore still be tracked at the project level. Table 2 shows the FY 2002 programs that have been consolidated into two budget line items. One is the combination of the surveillance programs as a safety output, the other is the balance of the ATB automation and infrastructure work. The combined investments of these programs are approximately $692 million.

Table 2 Budget Line Item Consolidation for the Terminal Business Service

FY 2002 BLI	Program Title Safety Category as New FY 2003 BLI 1A01
2A02	Next Generation Weather Radar - Provide
2A09	Air Traffic Control Beacon Interrogator Replacement
2A18	Air Traffic Control En Route Radar Facilities
2B01	Terminal Doppler Weather Radar – Provide
2B03	Airport Surface Detection Equipment
2B04	Airport Movement Area Safety System
2B14	Terminal Digital Radar (Airport Surveillance Radar - 11)
2B15	Airport Surveillance Radar – Weather Systems Processor
2B17	Airport Surveillance Radar (Airport Surveillance Radar - 9)
2B18	Mode-Select – Provide
2B20	Precision Runway Monitors
2B21	Airport Surface Detection Equipment Model X
2B23	Terminal Radar (Airport Surveillance Radar) Improve
FY 2002 BLI	**Program Title Efficiency Category as New FY 2003 BLI 2A01**
1B01	Terminal Automation Program
2B02	Terminal Automation Program
2B05	Terminal Air Traffic Control Facilities - Replace
2B06	Air Traffic Control Tower/Terminal Radar Approach Control Facilities – Improve
2B09	Potomac Terminal Radar Approach Control
2B10	Northern California Terminal Radar Approach Control
2B11	Atlanta Terminal Radar Approach Control
2B19	Terminal Applied Engineering
2B22	Houston Area Air Traffic System
2A01**	En Route Automation
4A08**	Permanent Change of Station Personnel Moves
**	Portions of the funding only

8.0 Measuring Progress

To measure progress, the following approach has been applied: (1) goals establish the overall objective and (2) metrics are employed to measure the progress toward achieving those goals. There are two types of performance-based goals, outcomes and outputs. Both are defined as measurable objectives. Output goals, in the context of the CIP, consist of the delivery of a product that supports the goal. In some instances, a program may support more than one goal. An output goal is narrow in scope and is measurable in terms of commitments within the programs to deliver capabilities that in turn deliver services.

Outcome goals relate to the changes in service performance—safer, more efficient, increased capacity, or reduced security risks. As the FAA implements a performance based organization, this realignment around goals will assist in setting priorities and managing agency performance to achieve the needed outcomes.

Safety improvement metrics and security measures are defined in the FAA Strategic Plan. Metrics are defined for the 31 capacity-constrained benchmark airports. Metrics have been in place for over two years in the Free Flight Phase 1 Program and now with the OEP. Specific performance goals for the performance based organization are under development.

9.0 Organization of the Capital Investment Plan Appendices

This CIP differs in perspective compared to the FY 2002 CIP. The FAA has prepared budgetary requirements for submission to Congress aligned to organizational goals. This CIP is organized to provide insight on the alignment of capital investments to programs supporting the attainment of measurable goals.

Appendix A describes the relationships between the DOT and FAA Strategic Goals and the outputs from capital investments.

Appendix B uses the same program-related performance structure as last year and is a matrix of the funding aligned to BLI and FAA Goals. It details each CIP project output goal by BLI number, FY 2001 accomplishments, and FY 2002 through 2007 performance goals.

Appendix C is the budget spreadsheet for FY 2003 through 2007, and is similar to the FY 2002 CIP with the exception of the consolidation of line items in navigation and the ATB.

Appendix D is an acronym list.

10.0 Conclusion

This FY 2003 through 2007 CIP is submitted to Congress describing a five-year view of the FAA's planned investments. At budget submittal, a key element of capitalization is still under review, the requirements for homeland defense, including surveillance, automation, and communications changes. The FAA will inform Congress of any changes in these areas as planning progresses.